



High Mobility Artillery Rocket System (HIMARS)



...Artillery systems, rockets and howitzers were much more devastating to Iraqi artillery than anything that could have come from air.” DepSecDef Paul Wolfowitz



USMC High Mobility Artillery Rocket System



- ✚ Introduction
- ✚ Program Overview & System Description
- ✚ HIMARS Munitions
- ✚ Tactical Organization
- ✚ T/O and T/E Changes
- ✚ HIMARS Capabilities
- ✚ Video



HIMARS TEST UNIT, MARCORSYSCOM



- ✦ Stood up in 2002
- ✦ Report to Deputy Program Manager, HIMARS
- ✦ August, 2005:
 - ✦ 2 MO: 0802
 - ✦ 13 ME: 0811, 0848, 0844, 3521, 3531, (2171)
 - ✦ 5 M142 Launchers
 - ✦ 11 Mk37 Resupply Vehicles
 - ✦ 10 Mk38 Resupply Trailers
 - ✦ 2 HMMWVs
- ✦ Transition to HIMARS New Equipment Training Team (NETT)



USMC Organic Deep Fires Capability Gap



- ✚ USMC needs a precision deep fires capability:
 - ✚ MAGTF Commanders require **24/7, all weather, organic**, ground-based, indirect fire support to accurately engaging targets at long range with high volumes of lethal fire **without pulling direct support artillery assets from maneuver commanders.**

✚ USMC Capability Gap

- ✚ “Current USMC ground fire support assets cannot adequately support Marine Corps operational concepts.” (Mission Area Analysis 24)
 - **USMC is out-ranged and out gunned on the battlefield.**
 - **Range limited in counter battery and deep fires to shape the battlefield.**
 - **TACAIR is not 24/7, all weather, high volume fire support to MAGTF & GCE Commanders.**
 - **M198/M777 is range/accuracy limited.**

USMC HIMARS Fulfills Capability Gap



USMC HIMARS Overview



- USMC HIMARS Program is an integrator of three principle end items and munitions. One USMC HIMARS system includes:

- A HIMARS Launcher Vehicle**

- Developer: US Army
- Prime Contractor: Lockheed Martin



- Two Re-Supply Vehicles**

- Developer: USMC PM MT
- Prime Contractor: Oshkosh Truck



- Two Re-Supply Trailers**

- Developer: USMC PM MT
- Prime Contractor: Oshkosh Truck



- Tactical MFOM**

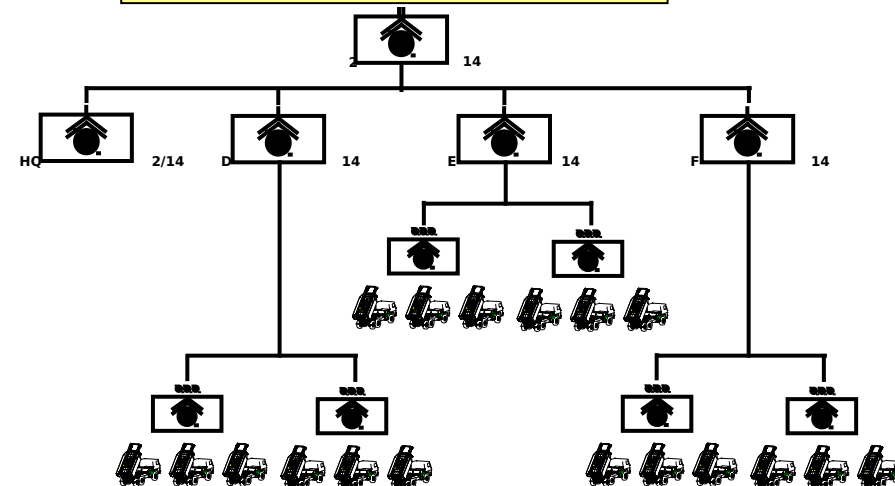
- Developer: US Army
- Prime Contractor: Lockheed Martin



- Planned Employment (2 Battalions & Supt Establishments, MPF Future)**

- 5th Battalion, 11th Marines (5/11)
 - 5/11 Batteries source all three Divisions
- 2nd Battalion, 14th Marines (2/14)
 - 2/14 Batteries support 14th Marines Force Artillery role and/or source Active Divisions as required.
- 1 Battalion, MPF Future
 - 2015 MEB baseline

One Battalion is 18 Systems



**Approved
Acquisition
Objective is 40
Systems**

USMC HIMARS



HIMARS Launcher System Description



- ➊ Launcher consists of
 - ☒ Chassis (FMTV 5-Ton)
 - ☒ Launcher Module
 - ☒ Fire Control System
 - ☒ Communications Suite
- ➋ Carries one pod

Reload System

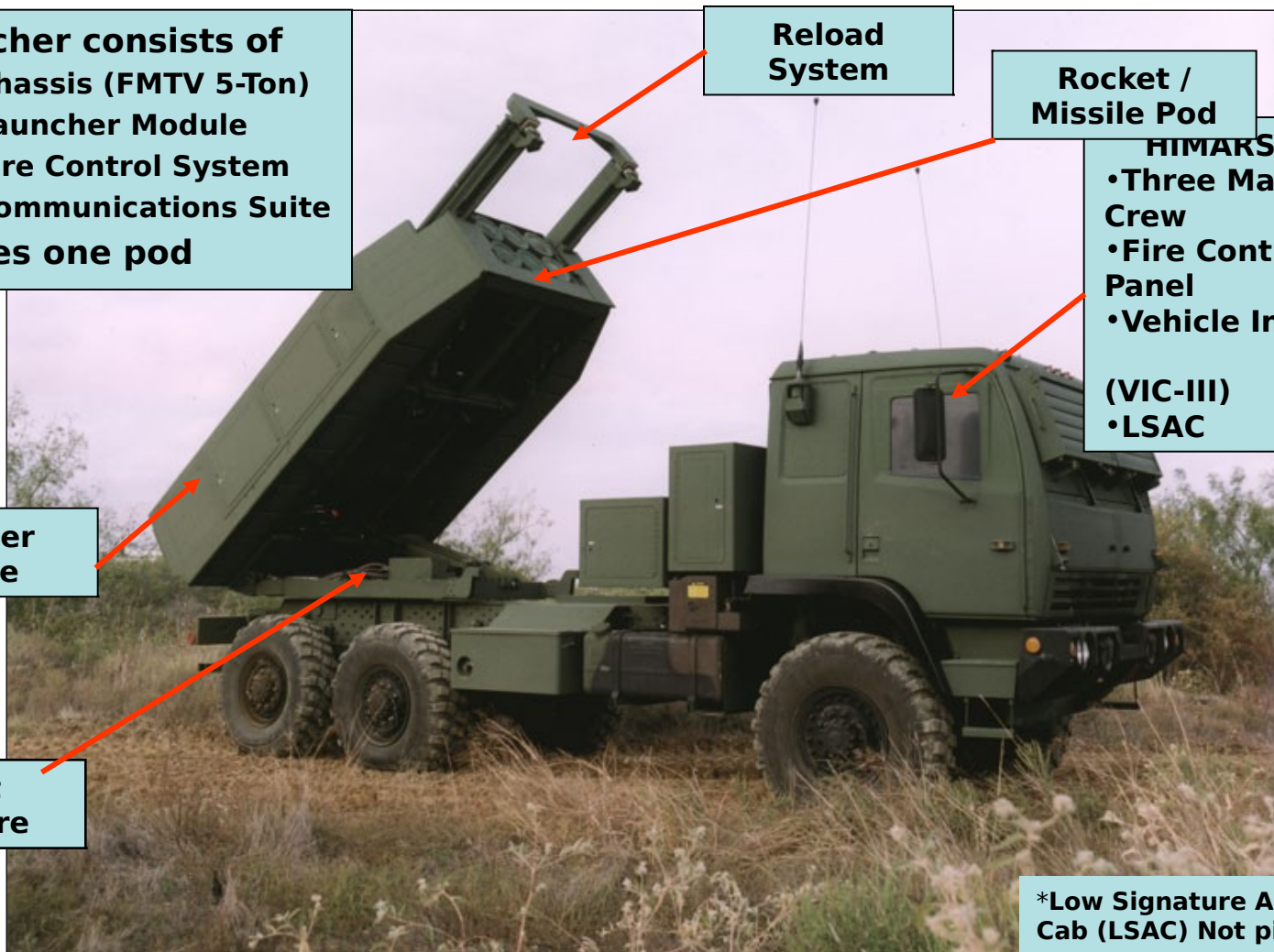
Rocket / Missile Pod

HIMARS Cab:

- Three Marine Crew
- Fire Control Panel
- Vehicle Intercom System (VIC-III)
- LSAC

Launcher Module

Turret Structure



*Low Signature Armored Cab (LSAC) Not pictured

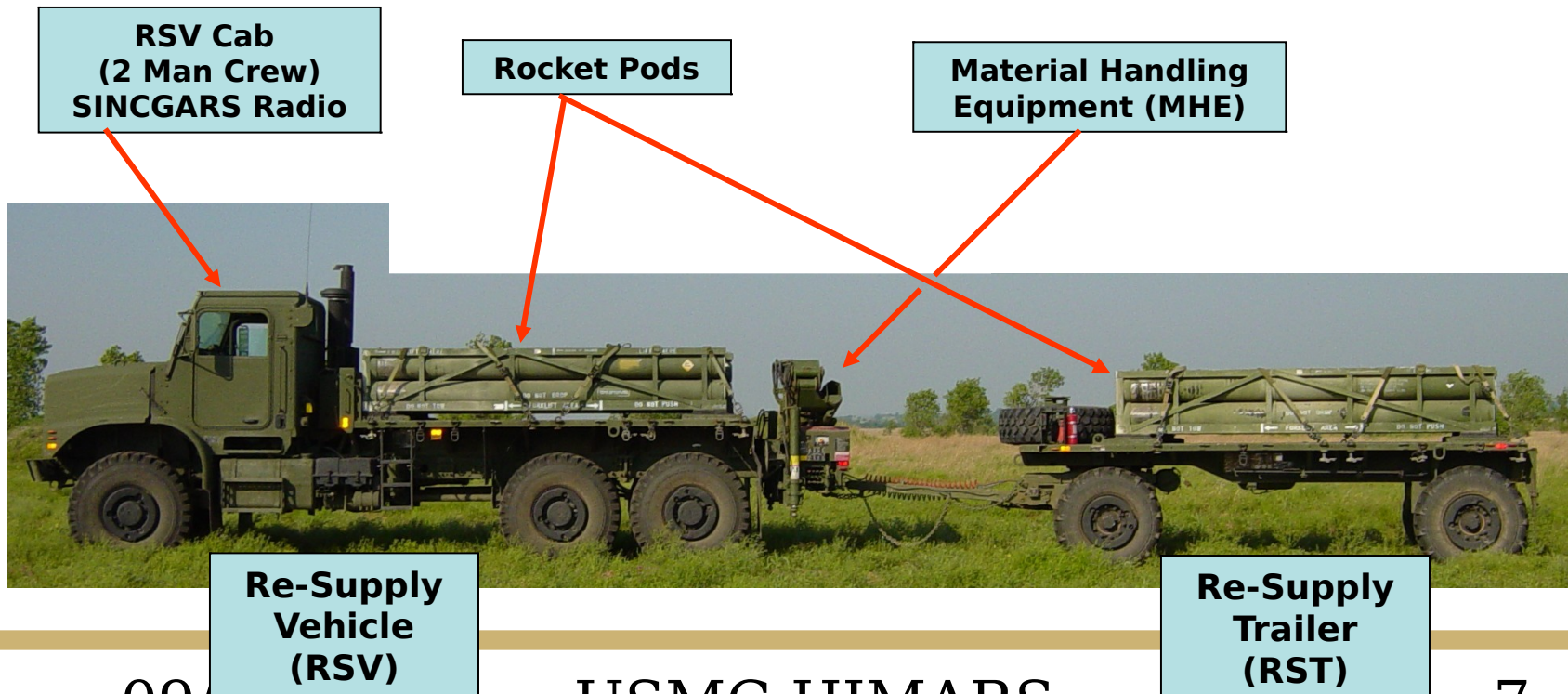


Re-Supply System (RSS) Description



- ✦ **Re-Supply System (RSS) = RSV + RST**
- ✦ **Twelve RSSs per Battery**
- ✦ **RSV is an MTVR Variant**
 - ✦ **Material Handling Equipment**
 - ✦ **VRC-90 (SINGARS w/ Amplifier)**
 - ✦ **Machine Gun Mount**
 - ✦ **Capable of Carrying 2 Pods**

- ✦ **RST**
 - ✦ **Capable of Carrying 2 Pods**
 - ✦ **CTIS and Anti-Lock Brake System**
- ✦ **MHE**
 - ✦ **Capable of Lifting and Transferring Pods Between RSVs, RSTs, and Ground**





USMC HIMARS Munitions



	RRPR M28A2	DPICM M26	DPICM M30	Unitary M31	Cargo Round	ATACMS*
Range	8 - 15 km	8 - 32 km	15-65+ km	15-65+ km	100+ Km	300 Km
Target Set (Warhead)	Practice Rocket (None)	Soft Area (DPICM)	Soft Area/Point (DPICM)	Area/Point (200lbs HE)	Smart Surgical Strike Smart Precision Strike Non-Lethal	Soft Area/Point (470lbs HE)
Availability	In Inventory	In Inventory	LRIP In Inventory FRP: May 05	LRIP In Inventory FRP: May 05	LRIP FY07 FRP: FY08	In Inventory

- ✦ **HIMARS is capable of firing all Multiple Launch Rocket System (MLRS) Family of Munitions (MFOM):**
 - ❖ **RRPR:** Reduced Range Practice Rocket (for training only).
 - ❖ **USMC to obtain subset of MFOM: RPPR, M26, M30, M31, Cargo Round.**
 - **Cargo Round** provides platform for various cargo types: flechettes, smart submunitions, jammers/sensors, EMP, propaganda, etc.
 - **M26 DPICM** rocket for interim capability only (FY '05 receipt of M30/M31).
 - ❖ **HIMARS is capable of firing the Army Tactical Missile System (ATACMS) land-based ballistic missile (*not currently in USMC Total Munitions Requirement).**



HIMARS vs 155mm Cannons



Range/Warhead Comparison

		M30/M3 1	155mm	155mm Extended Range	155mm Excalibur
Max Range		65+ Km	18 Km	28-30 Km	40+ Km
Warhead	DPICM (# of sub- munitions)	404	88	72	85
	HE	200lbs	<100lbs	<100lbs	<100lbs



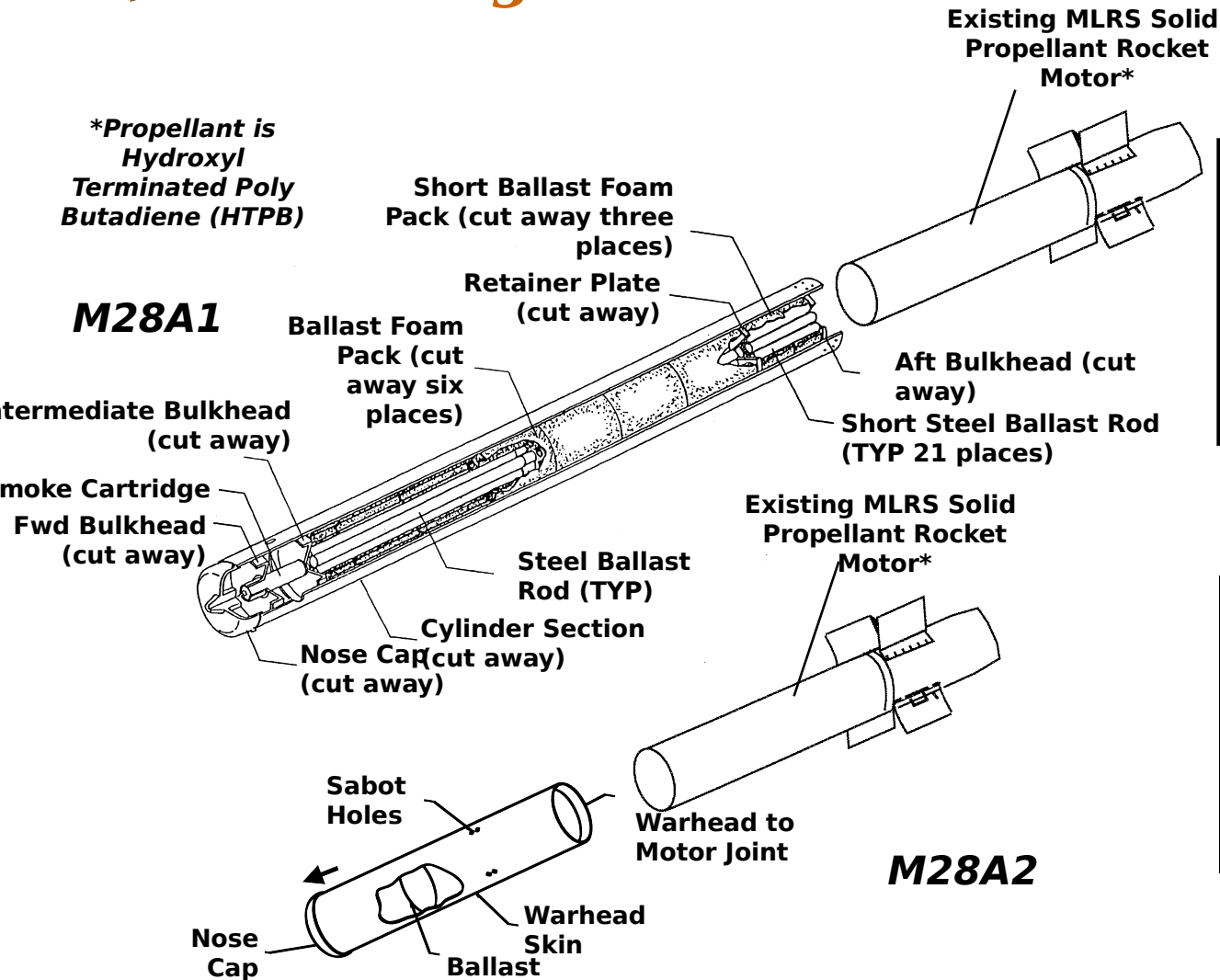


System Description: Training Munitions



**Propellant is
Hydroxyl
Terminated Poly
Butadiene (HTPB)*

M28A1



Existing RRPR (M28A1) With Smoke Warhead

Rocket Length	3.977 m
Warhead Length	2.0 m
Warhead OD	227 mm
Warhead Mass	307 kg

**USMC will not field this model*

Low Cost RRPR (M28A2) With No Smoke Warhead

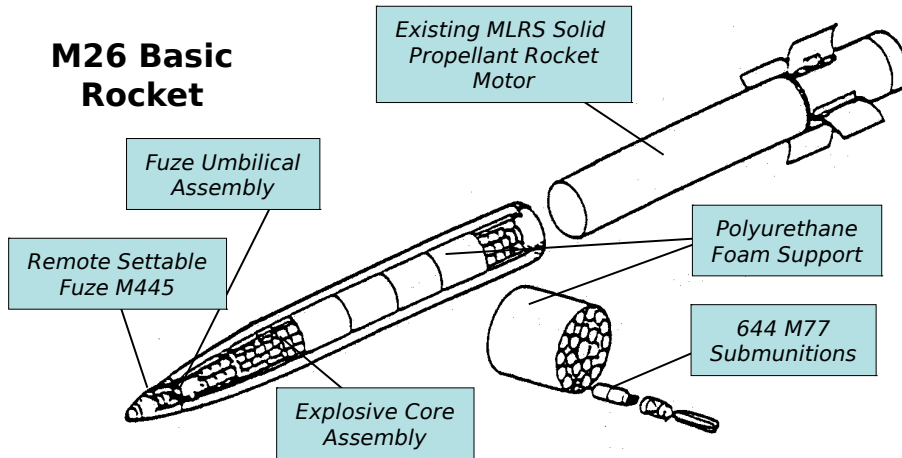
Rocket Length	3.063 m
Warhead Length	1.086 m
Warhead OD	227 mm
Warhead Mass	306 kg



M26 Basic Rocket



M26 Basic Rocket



Quick Comparison of M26 DPICM and 155 DPICM

HI MARS (3x6)	CANNON (3x6)
1 ROCKET	BATTERY 1(+) or 8 ROUNDS
1 LAUNCHER	BATTALION 2(+) or 44 ROUNDS
1 PLATOON	BATTALION 7(+) or 132 ROUNDS
1 BATTERY	BATTALION 14(+) or 264 ROUNDS

M26 Currently in USMC Inventory

Characteristics

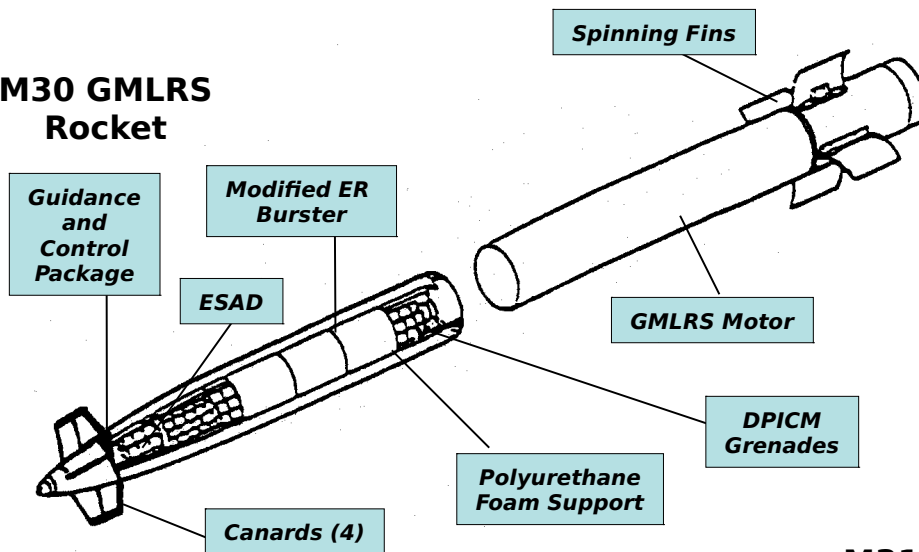
	M26 Basic	M30 and M31	M28A1 RRPR	M28A2 RRPR
Rocket Length	3.937 m	3.937 m	3.977 m	3.063 m
Rocket Diameter	227 mm	227 mm	227 mm	227 mm
Warhead Length	1.960 m	1.686 m	2.000 m	1.086 m
Motor Length	1.977 m	2.251 m	1.977 m	1.977 m
Launch Weight	306.2 Kg	283.5 Kg	307 Kg	306 Kg
Grenades/Warhead	644	404/200lbs HE	Smoke	N/A
Max. Range	32 Km	70 Km	15 Km	15 Km



M30 GMLRS Rocket & M31 Unitary Rocket



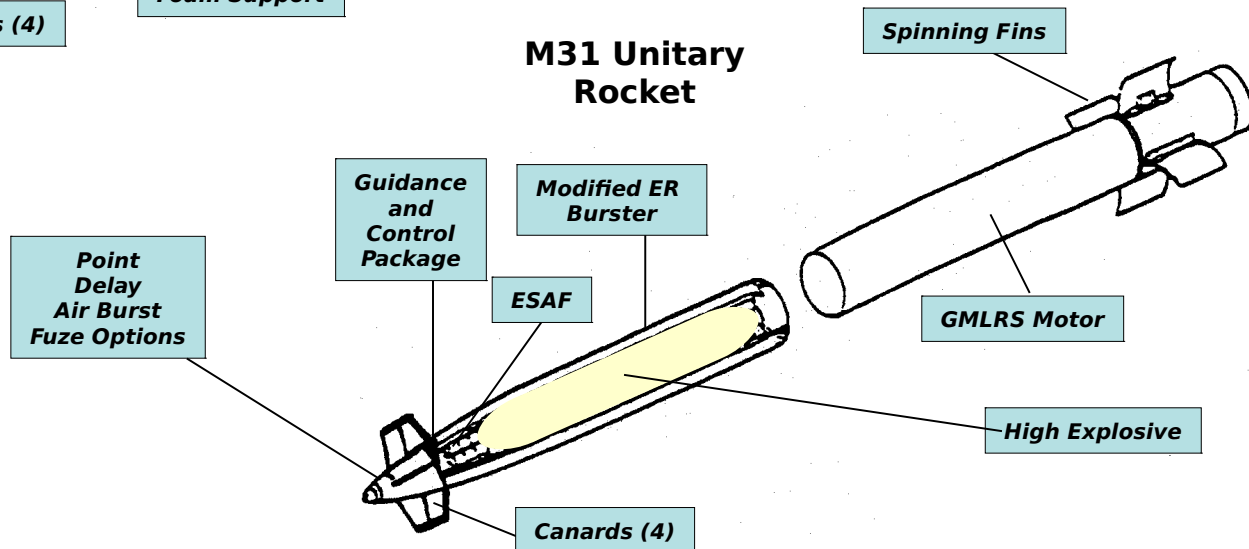
M30 GMLRS Rocket



Characteristics

	M26 Basic	M30 and M31	M28A1 RRPR	M28A2 RRPR
Rocket Length	3.937 m	3.937 m	3.977 m	3.063 m
Rocket Diameter	227 mm	227 mm	227 mm	227 mm
Warhead Length	1.960 m	1.686 m	2.000 m	1.086 m
Motor Length	1.977 m	2.251 m	1.977 mm	1.977 m
Launch Weight	306.2 Kg	283.5 Kg	307 Kg	306 Kg
Grenades/Warhead	644	404/200lbs HE	Smoke	N/A
Max. Range	32 Km	70 Km	15 Km	15 Km

M31 Unitary Rocket





Target Sets for Guided Munitions



Target Categories

1. Personnel
2. Materiel
3. Structures

Payloads

1. DPICM
2. Unitary
3. Smart

Personnel

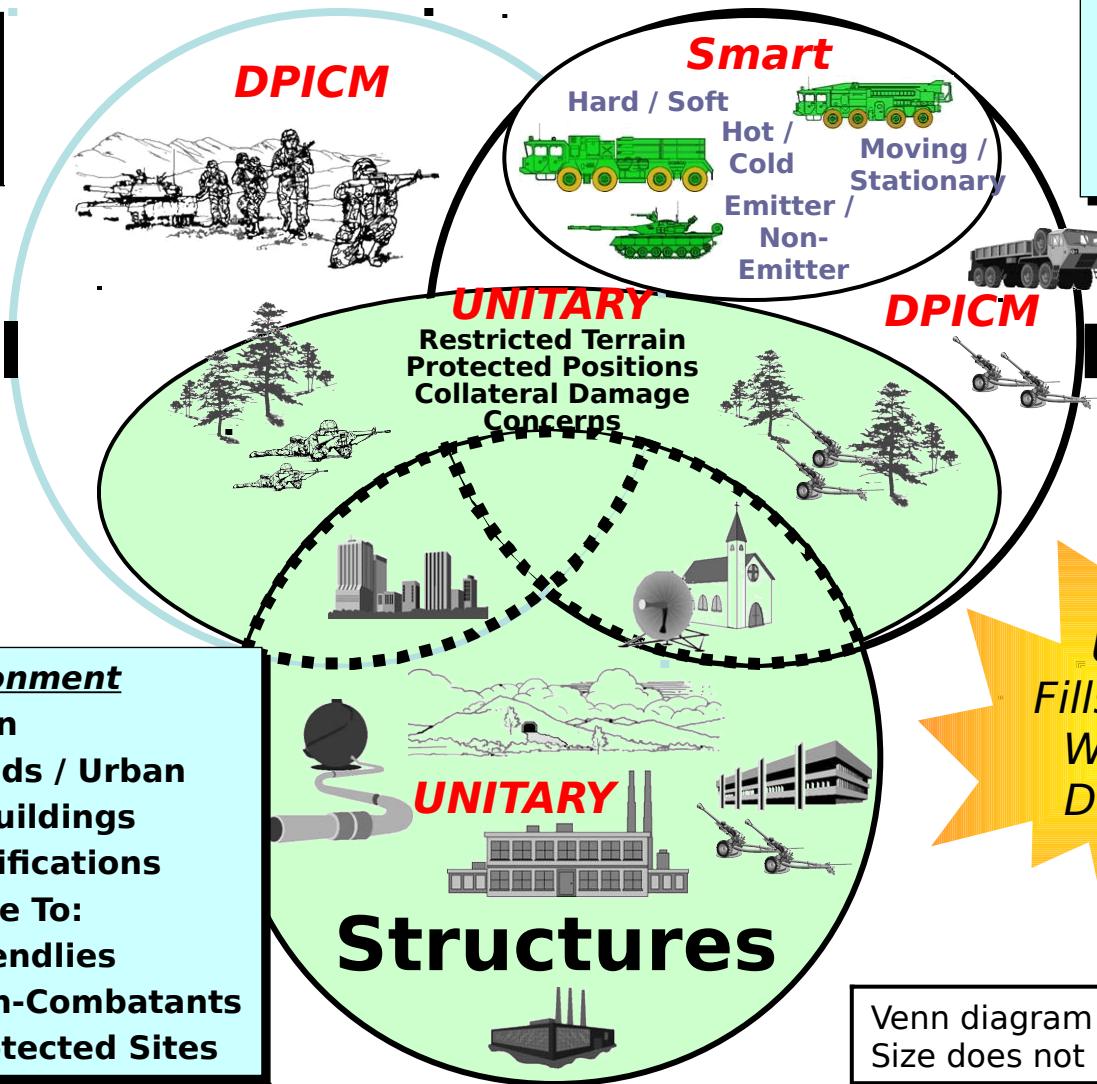
Target

Elements

- Personnel
- Vehicles
- Structures
- Weapons

Environment

- Open
- Woods / Urban
- In Buildings
- Fortifications
- Close To:
 - Friendlies
 - Non-Combatants
 - Protected Sites



Materiel

Structures

Unitary
Fills a Critical
Warfighter
Deficiency

Venn diagram intended to describe target sets
Size does not indicate target density.



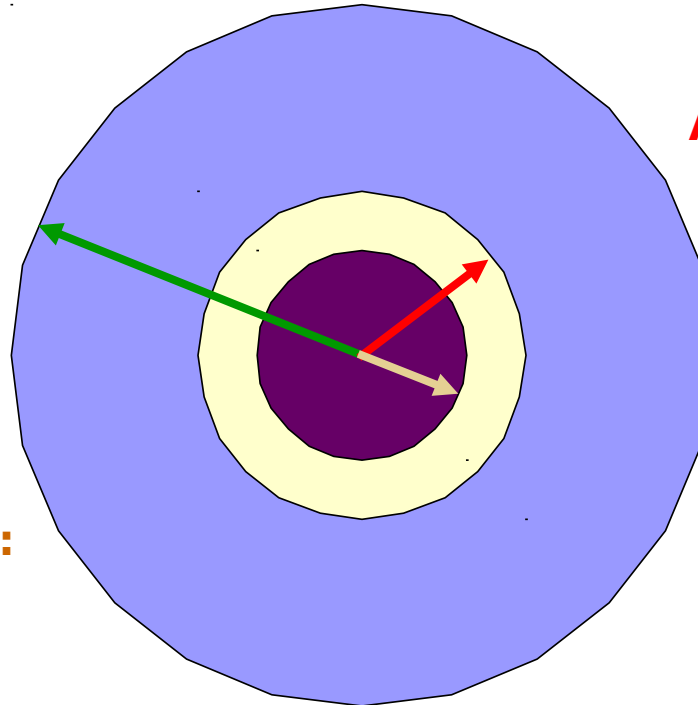
M31 Unitary Distribution of Effects



Collateral Damage Radius
Approx 150 m *
(PI and MSD classified)

GPS-Aided: CEP of
4m (unclassified)

Inertial Measurement Unit:
Accurate to approx 1 mil
(unclassified)



Radius of Effects
Against Personnel
Approx 60 m *

Radius of Effects
Against Material
Approx 40 m *

***GMLRS Unitary effects are concentrated
about point of detonation and quickly
taper off.***

* Based on preliminary M31 Unitary arena testing



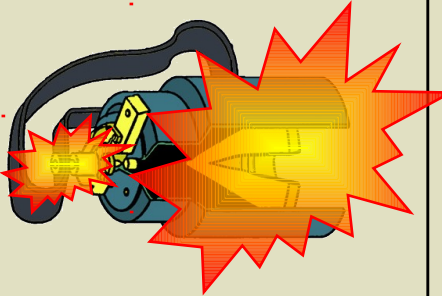
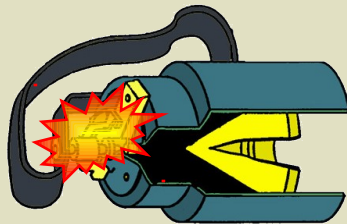
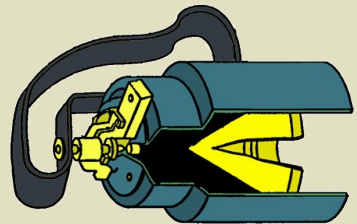
GMLRS DPICM Dud Mitigation With SDF



1. 95% Reduction in Duds Per Target

2. Less than 4% Dud Rate throughout Munition Range

3. Less than 2% for 25 to 60 km Range-to-Target

Primary Mode	Secondary Mode (Self Destruct)	Secondary Mode (Sterilized)	Hazardous Dud
Primary Mode  Safe	Detonator in Line with Lead Charge  Safe	Detonator Not in Line with Lead Charge  UXO	Live Detonator; Live Explosive  Dud
RELIABLE		UNEXPLODED ORDNANCE	



HIMARS Battery Organization and Organization for Combat



**Iraqi 2S1 SP Howitzer Destroyed
by Rocket Counter-Battery Fires**



HIMARS Battery Organization



☛ Headquarters Platoon:

- ☛ Command Element
- ☛ Fire Direction Center
- ☛ Communications Section
- ☛ Ammunition Platoon/Section
- ☛ Maintenance Section
- ☛ Medical Section

☛ Tactical Battery CP:

- ☛ Command Post (CP)
- ☛ Battery Operations Center/Fire Direction Center (BOC/FDC)
- ☛ Admin and Logistics Operations Center (ALOC)
- ☛ Ammunition Holding Area (AHA)





HIMARS Platoon Organization



✦ Firing Platoon (2 per battery)

- ✦ Command Element
- ✦ Fire Direction Center
- ✦ Communications Section
- ✦ Liaison Section
- ✦ Launcher Section (3 per plato

✦ Platoon Operations Area

- ✦ Platoon Operations Center (POC)
 - CP
 - FDC
- ✦ Firing Points (FP)/Hide Points (HP)
- ✦ Reload Points (RL) and AHA
- ✦ Survey Control Point (SCP)





HIMARS Table of Organization (T/O)



- ✦ Cannon Firing Battery T/O: 8 MO, 138 ME, 3 NE
- ✦ HIMARS Firing Battery T/O: 8 MO, 131 ME, 3 NE
- ✦ Cannon HQ Battery T/O: 23 MO, 165 ME, 5 NO, 4 NE
- ✦ HIMARS HQ Battery T/O: 22 MO, 151 ME, 2 NO, 4 NE
- ✦ Major Changes include:
 - ✦ Additional maintenance personnel to HIMARS Battalion
 - 2171s as Launcher Mechanics
 - FSRs (civilian contractors) from Lockheed Martin
 - 3521s for additional rolling stock
 - ✦ 0811 MOS/0814 MOS Skill Designator



HIMARS Table of Equipment (T/E)



✦ Significant changes to T/E:

✦ HQ Battery:

- Logistics Vehicle Systems (6)
- 6-Cons (4)
- Wrecker (3)
- Enhanced Position Locating and Reporting System (EPLRS) (6)
- Tractor, Rubber-Tired, Articulated Steering, Multi-Purpose (2)

✦ Firing Battery

- Crew-Served Weapons (13xM240G, 5xM2, 5xMk19)
- VRC 90/92s (One VRC-90 per RSS, additional VRC-92s for POCs)
- EPLRS (4)
- PVS-7B/PVS-14s (94)
- HMMWVs (23)



Organization for Combat



- 5/11 will support divisions.
 - Any single or combination of 1st, 2nd, or 3rd Marine Divisions.
- 2/14 will support MEFs.
 - MEF Commander's long-range artillery
 - Force Artillery Headquarters

Platoons are capable (per T/O and T/E) of operating independently of a battery, but most likely with additional support from parent battery and battalion.



HIMARS Capabilities



HIMARS provides transformational fires for both Traditional and Irregular Operations



Traditional

- ❑ **Organic, ground based, long range, precision, all-weather, 24/7 General Support and General Support Reinforcing fires for Division and MEF Commanders.**
- ❑ **Long Range 65+ KM, Precision Guidance (GPS/INS)**
- ❑ **Responsive Call for Fires**
 - 3-9 minutes from call for fire to effects on target at 60Km based on Fire Support Coordination guidelines.
 - 5 minute reloads.
- ❑ **Low Cost exponential increase in indirect fires capability**
 - (1) Volley from a HIMARS Battery = (11) Volleys from a 155mm Battalion
 - (1) HIMARS Battalion Basic load = (194) F-18 Sorties w/(5) JSOW per AC
 - (HIMARS \$75.3M vs JSOW \$324.9M) Does not include platform operating costs



Irregular

- ❑ **Provides maneuver commanders with immediate precision fires to engage, suppress, destroy, and deny terrain to the enemy, in all environments, with maximum lethality, and minimal ammunition expenditure and collateral damage.**
- ❑ **Unitary GPS/INS munitions have demonstrated an accuracy of 2m @ 58 km.**
- ❑ **CG MNC-I Urgent Needs Statement requesting Unitary GMLRS munitions for OIF II; M31 Pods in theater now.**

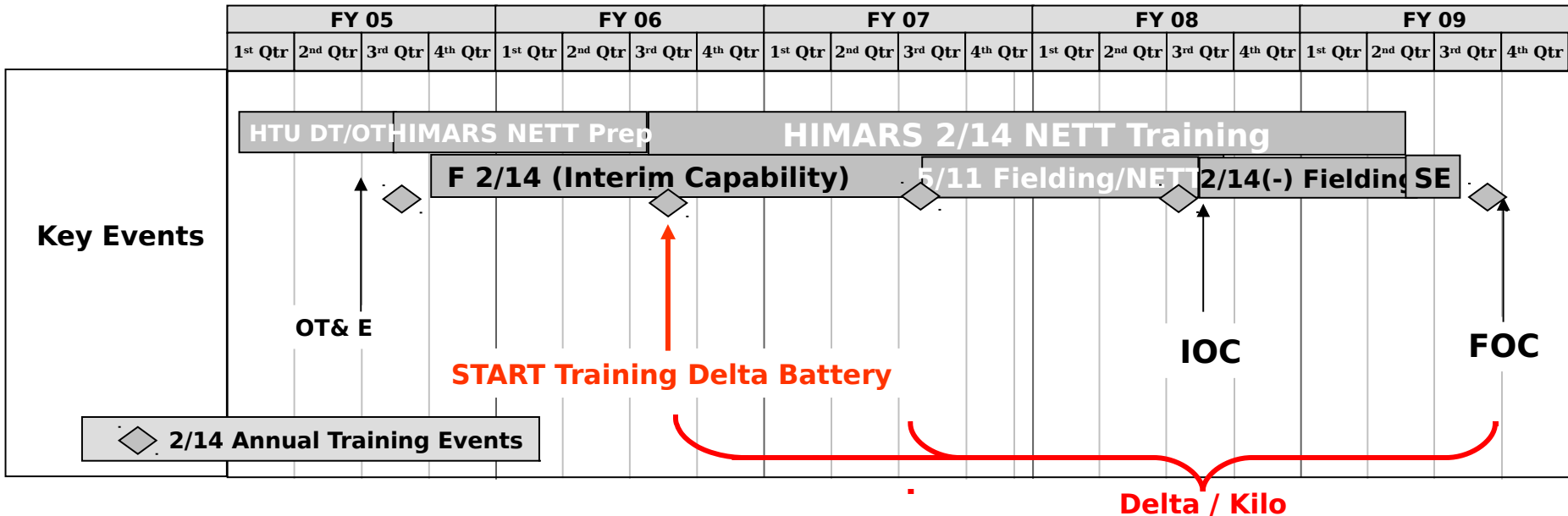


Future

- ❑ **Continued leverage of Army Transformational efforts (cargo round).**
- ❑ **2015 MEB per O&O**



Program Schedule



Scheduled Fielding

- ❖ F 2/14 - FY 05 (Interim Capability)
- ❖ 5/11 - FY 07-08 (IOC)
- ❖ 2/14 - FY 08 -09 (FOC)

Purchasing schedule will not likely affect fielding schedule significantly.



New Equipment Training Team

- ❖ D Btry: Summer '06
- ❖ K Btry: Summer '07
- ❖ 5/11: May '07

Delta and Kilo will leverage Fox Btry's Gear for NETT Training.



Questions?



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HIMARS/GMLRS Capabilities Video



09/05/16

USMC HIMARS

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